

VF : WATER -- FLUORIDATION

Fluorides

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Official Statements of Medical,
Dental and Public Health
Organizations
about
Fluoridation

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FLUORIDATION OF PUBLIC WATER SUPPLIES

A. Official Statements of Medical, Dental and Public Health Organizations.

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B. Excerpts from the Report of the U. K. Mission on Fluoridation of Water Supplies

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C. Present Extent of Fluoridation.

1. The American Water Works Association - June 1949.

In communities where a strong public demand has developed and the procedure has the full approval of the local medical and dental societies, the local and State health authorities and others responsible for the communal health, the water departments or companies may properly participate in a program of fluoridation of the public water supplies.

The American Water Works Association - May 1951.

Recommendations for fluoridation are the prerogative of the dental, medical and public health groups. When the proper authorities approve the treatment, it then becomes the function of the water works utility and industry to follow through willingly and intelligently where proper controls are ensured.

2. State and Territorial Dental Health Directors - June 1950.

Resolved, That the State and Territorial Dental Health Directors recommend the fluoridation of public water supplies for the partial control of dental caries, where the local dental and medical professions have approved this program and where the community can meet and maintain the standards required by the State health authority.

3. The American Association of Public Health Dentists - Oct. 1950.

Resolved, That the American Association of Public Health Dentists recommend and encourage the fluoridation of public water supplies for the partial control of dental caries where the community can meet and maintain the standards required by the State health authority.

4. The American Dental Association - Annual Meeting - Nov. 1950

Whereas, Numerous studies have demonstrated a decreased incidence of dental decay associated with the presence of fluoride occurring naturally in drinking water, and,

Whereas, There is a rapidly accumulating body of data derived from direct studies of the artificial addition of fluoride to drinking water, and,

Whereas, These data provide convincing evidence of the safety of this procedure and of its benefits in terms of reduced incidence of dental caries, therefore be it

Resolved, That the American Dental Association recommends the fluoridation of municipal water supplies when the fluoridation procedure is approved by the local dental society and utilized in accordance with the standards established by the responsible health authority, and be it further

Resolved, That the American Dental Association recommends the continuation of controlled studies of the benefits derived from the fluoridation of water supplies.

5. State and Territorial Health Officers Association -
Nov. 1950.

Whereas, Careful scientific observations since 1929 indicate that tooth decay is not as prevalent in individuals using water supplies containing sodium fluoride, and

Whereas, The artificial fluoridation of public water supplies was experimentally instituted and has been under continuous study since 1945, and

Whereas, These studies have shown that there is no menace to the teeth of the persons using 1 part per million of sodium fluoride, and

Whereas, State and Territorial Dental Health Directors have endorsed in principle the fluoridation of public water supplies as a partial protection against dental caries, therefore be it

Resolved, That the Association of State and Territorial Health Officers recommend, where the medical and dental professions concur and where communities can meet the standards of the State health authorities, that all State health officials approve the artificial fluoridation of public water supplies for the partial control of dental caries.

Dec. 1952.

That the State and Territorial Health Officers Association, in view of the overwhelming evidence in favour of water fluoridation, re-emphasize that the full benefits of this public health measure should be

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brought to all communities as rapidly as possible and that the Association members aid communities in developing fluoridation programs by providing effective information, dental and engineering assistance.

6. The American Public Health Association - Nov. 1950.

Whereas, Accumulated evidence indicates a sound basis for the fluoridation of public water supplies for the partial control of dental caries, therefore be it

Resolved, That this procedure be recommended as a safe and effective method for reducing the prevalence of dental caries.

7. U. S. Public Health Service, Federal Security Agency - Apr. 1951.

During the past year our studies progressed to the point where we could announce an unqualified endorsement of the fluoridation of public water supplies as a mass procedure for reducing tooth decay by two-thirds.

8. The Council on Food and Nutrition and the Council on Pharmacy and Chemistry of the American Medical Association, Nov. 1952.

The Councils are unaware of any evidence that fluoridation of water supplies up to a concentration of one part per million would lead to structural changes in the bones or to an increase in the incidence of fractures. The only difficulty so far revealed is a possible increase in mottling of the tooth enamel. From the available evidence based on thousands of observations, mottling of enamel in children who drink water containing fluorides up to a concentration of one part in a million is minimal and detectable only by careful dental examination. It occurs only in a small percentage of children and is so slight as not to present a problem from the point of view of appearance or strength of the teeth. Evidence of toxicity other than the effect on enamel has not been reported in communities where the water supply has several times this concentration. After considering the evidence available at this time, the Councils believe that the use of drinking water containing up to one part per million of fluorides is safe.

8. The American Medical Association - Dec. 1951.

Whereas, Carefully controlled studies have demonstrated that fluoridation of water supplies has been definitely beneficial in the reduction of dental caries in the younger age groups, and

Whereas, the Council on Pharmacy and Chemistry has reported that fluoride is non-toxic in community water supplies up to one part per million, and

Whereas, the addition of fluoride to community water supplies seems to have merit, therefore be it

Resolved, that the House of Delegates of the American Medical Association endorse the principle of fluoridation of community water supplies.

Dr. Geo. F. Lull, secretary and general manager of the American Medical Association:

"I can say that the American Medical Association endorses fluoridation of public water supplies. Gerald Smith and many others have twisted the words around because of the fact that in one action of the House of Delegates the word 'principle' was used. No matter what words were used, the endorsement is that public water supplies should be fluoridated in order to prevent dental caries in children."

From a letter to the Committee on Interstate and Foreign Commerce of the United States House of Representatives conducting a hearing on the Wier bill - May 1954.

9. Report of the Ad Hoc Committee on Fluoridation of Water Supplies, Division of Medical Services, National Research Council, Washington, D.C. - Nov. 1951.

Under normal conditions of living, fluorine is a trace element in human nutrition. A variable and important source of it is drinking water. Many of the public water supplies in the United States are deficient in this element. Children who depend upon such supplies have a high dental-caries-attack rate compared with children living in cities having water supplies containing approximately one part per million of fluoride. The advantage of the latter group is considerable and amounts to one-third to one-half as much caries. The caries-preventive effect of adequate

fluoride intake is principally conferred upon children until approximately the twelfth year of life, the period during which dentine and enamel of the permanent dentition are being formed. This increased resistance to dental caries is carried over into later life to an appreciable degree.

The results of experimental studies conducted in the laboratory give consistent support to the concept of the inhibitory effect of fluoride on the caries process. There is a safe margin between trace quantities in drinking water which are required for optimal dental health and that amount which produces undesirable physiological effects. The most sensitive indication of the latter amount is interference with normal calcification of the teeth which is manifested in mottled enamel, or endemic fluorosis.

This effect, although compatible with caries-resistant tooth structure and, within certain limits, with apparent physiological well being, is aesthetically undesirable. The level of fluoride concentration in drinking water that is associated with the appearance of mottled enamel varies with individual susceptibility and with the amount of water consumed. The upper level of safety has been reached, in the northern part of the United States, in domestic water supplies containing approximately 1.0 - 1.5 parts per million fluoride and, in the southern part of the country, with supplies containing approximately 0.7 parts per million.

There is no reason to believe that prolonged ingestion of drinking water with a mean concentration below the level causing mottled enamel will have an adverse physiological effect. Progress reports in several communities in which sodium fluoride has been added to the water supplies of low fluoride content indicate that this procedure will reduce the caries-attack rate in children. There is evidence to suggest that it will confer an appreciable measure of protection to their teeth after they become adults.

In view of these considerations this Committee recommends that any community that has a child population of sufficient size and obtains its water supply from sources which are free from or are extremely low in fluorides should consider the practicability and economic feasibility of adjusting the concentration to optimal levels. This adjustment should be in accordance with climatic factors, and a constant chemical control should be maintained. With proper

safeguards this procedure appears to be harmless. However, it should be conducted under expert dental and engineering supervision by the State board of health. It should not be undertaken unless this supervision can be provided.

The degree of reduction in the prevalence of caries that will actually be realized in a particular community will vary according to local conditions. The procedure will supplement but not supplant other dental health measures. Approximately one-half of the population of this country is living in small villages and rural areas and will not benefit by fluoridation of public water supplies. Other provision for preventing dental caries in this fraction of the population should be continued and developed.

10. The Inter-Association Committee on Health - Feb. 1952.

representing:

The American Public Health Association
 The American Nurses Association
 The American Medical Association
 The American Hospital Association
 The American Dental Association
 The American Public Welfare Association

Resolved, That the Inter-Association Committee on Health urges the fluoridation of the fluorine-deficient public water supplies of this country as rapidly as plans can be approved by the local medical, dental and health department officials and the State departments of health.

11. The Canadian Public Health Association - June 1952.

Whereas dental caries continues to be an almost universal disease affecting the health of the Nation, and

Whereas a convincing amount of evidence has accumulated indicating the marked value of fluoridation of water supplies in reducing dental caries in children, and

Whereas there is considerable evidence that the dental protection so acquired in early life is carried over, in good measure, into adult years, and

Whereas no detrimental effect has been demonstrable in those populations which have been using properly fluoridated water for seven years and longer,

Be it resolved that the Canadian Public Health Association recommends the fluoridation of community water supplies for the reduction of dental caries in those communities where there is at present an insufficient fluoride content for this purpose and where the procedure can be adequately controlled and supervised.

Resolution re-affirmed by the Association in Oct. 1953.

12. The Canadian Dental Association, Research Committee - Feb. 1951.

As the earliest studies undertaken on artificial fluoridation are still in progress and reporting at intervals, the Research Committee of the Canadian Dental Association does not feel justified in completely endorsing without some qualification the fluoridation of communal waters. However, in view of the widespread approval given this procedure by other responsible bodies and because no ill effects have been noted from the procedure, this Committee feels that communities considering fluoridation should be informed that they might reasonably expect a reduction in dental caries to follow such action. At the same time they should recognize that no studies have yet been completed and that additional facts might emerge from studies now in progress. Furthermore, it should be understood that reduction in caries will be limited and that this method should be considered an adjunct to other preventive measures.

A study of fluoridation is now being conducted by the Department of National Health and Welfare, Ottawa. Until this and other studies are completed, it is recommended that water fluoridation projects should be planned and conducted so that they will provide reliable data which will supplement our present knowledge and serve as progress reports.

The Canadian Dental Association, Research Committee, - Mar. 1952.

Evidence is rapidly accumulating with respect to the reduction in caries incidence in child populations following the addition of sodium fluoride to communal water supplies. As reported in an earlier statement by this Committee, a number of scientific and administrative organizations are now recommending the fluoridation of municipal

water supplies. The National Research Council in Washington and the American Medical Association have recently added their approval to this procedure.

While the facts in support of a reduction in caries for the teeth of young children are now well established, there is no evidence available as to the effects of a long-term ingestion of sodium fluoride either in relation to general health or to the health of the supporting structure of the teeth. Unconfirmed reports suggest the possibility of more gingival and periodontal disease in fluoridated areas.

Until scientific evidence is provided in all aspects of the problem, the Research Committee recommends that communities interested in fluoridating their water supplies do so only on an experimental basis and that accurate records be kept of all details of the study. By so doing, not only would the children benefit by a reduction in caries but much valuable information would be added to our present knowledge.

The Research Council is well aware of the magnitude of this public health problem. It will continue to examine new evidence as it is released and will make reports to the profession when additional information is available.

The Canadian Dental Association - Oct. 1953.

Whereas tooth decay, by affecting the vast majority of people in Canada, has come to be recognized as one of the major public health problems of our time,

And Whereas many thousands of Canadians and millions of people elsewhere have consumed during their total lifetimes, water fluoridated to approximately one part of fluoride to a million parts of water from underground deposits, and have thereby benefitted by a reduction of about two-thirds in the attack rate of tooth decay without any ill effects discoverable by either the dental or medical professions,

And Whereas the effects of adjusting the fluoride content of communal water supplies to approximately one part per million have been studied extensively in their dental and medical aspects for more than eight years, revealing in every instance the same beneficial dental health results

that have been known for over 20 years to accrue from consuming water fluoridated from underground deposits, and with the same freedom from any systemic ill effects,

Therefore be it resolved that the Canadian Dental Association recommends to the people of Canada that communities having a public water supply, adopt a procedure for fluoridation best suited to their local needs, and for this purpose seek competent dental, medical and engineering advice.

13. Statement of the Joint Committee of the Canadian Dental Association and the Canadian Medical Association - Jan. 1953.

In response to many requests for information, the following statement dealing with the public health procedure of fluoridation of communal water supplies has been prepared by a joint committee of the Canadian Dental Association and the Canadian Medical Association.

What is fluoridation?

The word "fluoridation" as here used means the addition of a fluoride compound to water. Some water supplies are naturally fluoridated from the soil and rock through which they pass. Since 1945 many communities have artificially raised the fluoride content of their water supply to about one part per million by the addition of a fluoride compound. This is a level at which optimal dental benefits can be expected and at which no detrimental effects have been demonstrated.

What can fluoridation accomplish?

It has been found that children residing in communities with a water supply brought in 1945 to one part per million of fluoride have considerably less decay in their teeth than children whose water supply is practically free of fluoride. While it is known that the protection from caries conferred by naturally fluoridated waters carries over into adult years, sufficient time has not yet elapsed in connection with artificially fluoridated waters to state definitely the extent of adult protection.

What does fluoridation cost?

Fluoridation is accomplished by means of a mechanical feeding device, usually automatic, operating in conjunction with the regular water works equipment. Accurately measured quantities of some fluoride is mixed into the

water supply under the supervision of qualified water works staff.

Cost of equipment, of fluorides, and the operating costs vary from place to place and from time to time. It is suggested that estimates be obtained through the local water works engineer or from supplying firms.

What hazard is involved?

None of the evidence reported to date indicates any ill effects when the concentration of fluoride in water is about 1 to 1.2 parts per million. From naturally fluoridated areas it has been found that at about 1.5 parts per million some children develop teeth with mild mottling or mild fluorosis, commonly detectable only by experienced observers.

Under most circumstances the greater part of the fluoride intake comes from drinking water and relatively small amounts from other sources such as food. But this is not always true. Some foods contain considerable quantities of fluoride. Fluoride intake may be increased by the use of materials to which fluoride has been added such as tablets, lozenges, dentifrices or chewing gum. Exposure to fluorides may occur not only within certain industries but also in their neighbourhood. In planning the fluoridation of a communal water supply, consideration must be given to sources of fluoride other than water, and steps must be taken to ensure that the fluoride intake from such sources is not excessive.

Since there are many unanswered questions involved in fluoridation of water supplies, investigations are continuing in both the dental and medical fields.

How to go about it.

Communities considering water fluoridation should, as a first step, discuss the subject with the local dental, medical and water works authorities. There are several important matters of planning to be settled for each community individually. Among these matters is a scientifically reliable basis for judging the effects of the programme in the reports that are the regular responsibilities of community health groups.

14. Resolution adopted by the Council of the Canadian Medical Association - June 1954.

Resolved that this Council approves the fluoridation of communal water supplies under proper supervision and safeguard.

15. Resolution of the Dental Public Health Committee of the Ontario Dental Association - Feb. 1953.

Whereas accumulated evidence indicates a sound basis for the fluoridation of public water supplies, as outlined by the Joint Committee on Fluoridation of the Canadian Medical Association and the Canadian Dental Association, as a preventive measure for dental caries and,

Whereas the accumulated body of data provides convincing evidence of the safety of this procedure, therefore be it

Resolved, that in the interests of public health, the Dental Public Health Committee of the Ontario Dental Association recommends this procedure as a safe and effective preventive measure for reducing the prevalence of dental caries.

16. Statement of the Council of the Academy of Dentistry, Toronto. 1953.

The Council of the Academy of Dentistry, Toronto, approves of the principle of artificial fluoridation of communal water supplies as an endeavour to reduce the incidence of dental caries; and will support the programme of the Department of Health, City of Toronto, under the conditions incorporated in the reports from the Canadian Dental Association and the Research groups concerned in this project. We also wish to keep before us the possibility of the influences of future findings and reports from the continued study of the problems pertinent to this project.

We wish to point out that the figures obtained from these studies are averages of large groups and that one of the hazards of a programme of this nature is the public inclination to accept it as a treatment and to expect more or less total immunity to dental caries in

individuals as a result. Consequently we feel that unless this factor is stressed, that there will be a tendency towards the neglect of the basic principles of prevention of dental caries which we feel are still so necessary to maintain, and that, if such a situation results, there may be a loss of confidence by the public towards our professions who are striving for the alleviation of the ravages of this disease.

17. The Ontario Public Health Association.

The Board of Directors on January 19th, 1953, passed the following resolution:

Resolved that the Directors impress upon the Minister of Health the value of fluoridation of water supplies.

The following resolution was passed at the annual meeting of the Association, October 2nd, 1953:

Resolved that the Ontario Public Health Association go on record as strongly recommending fluoridation of communal water supplies.

18. The Commission on Chronic Illness (U.S.A.)
Baltimore, Maryland.

"The Commission has been advised by the foregoing expert opinion that extensive research into the toxicology of fluorine compounds has revealed no definite evidence that the continued consumption of drinking water containing fluorides at a level of about one part per million is in any way harmful to the health of adults or those suffering from chronic illness of any kind. While the evidence does not absolutely exclude this possibility, if a risk exists at all, it is so minimal and inconspicuous that it has not been revealed in many years of investigation. The Commission, therefore, urges American communities to adopt this public health measure as a positive step in the prevention of the chronic disease, dental caries."

19. The Council of the Academy of Medicine, Toronto, June 1954.

Resolution passed by the Council, June 14th, 1954.

"That this Council supports the Local Board of Health and the Medical Officer of the City of Toronto in their attitude towards fluoridation of the water supply of Greater Toronto, and

"That the Council officially inform its representative on the Board of Health, Dr. Kendal Bates, that the Council is on record as being in favour of fluoridation of the municipal water supply of Greater Toronto."

20. The Health League of Canada - June 1954.

Resolved that in view of the overwhelming mass of evidence received by our Committee on Fluoridation from all over North America emphasizing the importance of fluoridation of communal water supplies for the prevention of caries and also of overwhelming evidence to the effect that fluoridation in approved quantities does no harm to the human organism, this Association on receiving the report of its Fluoridation Committee immediately goes on record as endorsing, without qualification, the fluoridation of water supplies in quantities recommended by official Departments of Health.

21. The Canadian Society of Dentistry for Children.

Resolution passed by the Society, May 15th, 1954.

"WHEREAS the Canadian Society of Dentistry for Children possesses a profound interest in the health of all children and the Society recognizes that the fundamental or basic approach to the control or elimination of any disease is prevention,

"AND WHEREAS tooth decay and its after-effects involve the majority of persons in Canada, making dental disease one of the country's major public health problems,

"AND WHEREAS it is known that persons having consumed water fluoridated to approximately one part fluoride to one million parts water, during their total lives, have experienced a marked reduction in tooth decay without any discoverable ill-effects,

"AND WHEREAS intensive studies have been made relative to adjusting the fluoride to one part per million parts water revealing similar reductions in tooth decay and the same freedom from systemic ill-effects,

"THEREFORE BE it resolved:

"That the Canadian Society of Dentistry for Children

"recommends that areas in Canada having access to community water supplies adopt a procedure of water fluoridation in accordance with the local need following receipt of competent dental, medical and engineering advice."

- B. Extracts from the Report of the United Kingdom Mission from the Ministry of Health, Department of Health for Scotland, Ministry of Housing and Local Government, on The Fluoridation of Domestic Water Supplies in North America as a Means of Controlling Dental Caries. February-April 1952.

"Research into the toxicology of fluorine compounds has been continuous, and the possibility that continuous low-level consumption of fluoride might eventually cause undesirable effects has been recognized for many years. This research and awareness has been stimulated by keen scientific and public interest and by not a little controversy. Yet, no definite evidence has been forthcoming that the continued consumption of fluorides at a level of about 1 p.p.m. is in any way harmful to health. This is an impressive fact and one which, in our opinion, makes it quite certain that if any untoward effect is revealed by future research it will be of a relatively trivial order. If a risk exists at all, it is so inconspicuous that it has not been revealed by many years of investigation. Millions of people are living in ordinary good health on water containing fluoride in the amounts recommended for caries control (or more) so that fluoridation of other waters involves no new experience in human welfare."

"It is well known that radiological changes can occur in the spinal and other bones among workers exposed to dust containing high concentrations of fluoride, though disability is not common even among men who have been so exposed for many years. We were unable to find any evidence pointing to the existence of skeletal abnormalities among populations using water supplies containing fluoride at the levels recommended for the control of caries, though there is some inconclusive American evidence of radiological change unaccompanied by disability, when the level is considerably higher. In the Newburg-Kingston study, radiographs of children have been studied by an independent expert who did not know which groups the cases came from, with negative results. Studies of fracture incidence and of growth have been made, and no relation to exposure to fluorides has been found."

"Public controversy in the United States has caused several types of possible hazard to receive close attention. One of the most widely publicised was a report from the University of Texas, that water containing fluorides at a level of 1 p.p.m. favoured the development of cancer among

"mice. This work has several serious technical flaws, and was publicly disclaimed by the Vice-President of the Medical Branch, University of Texas. So far as human cancer is concerned, there is no evidence that the presence of fluoride in the public water supplies has any harmful effect."

"It is worth noting that atypical clinic effects among cases of nephritis in areas where the water contains natural fluoride even in concentrations above 1 p.p.m. have not been established."

"Thus water containing only 1 p.p.m. of fluoride causes no more than questionable or very mild mottling, that is, only an occasional white fleck or spot in enamel, and even then in only 10 per cent. of the population. Such white flecks are so inconspicuous that they can be detected only by expert examination and to demonstrate them photographically polarized light must be used."

"It is unfortunate that some term other than 'fluorosis' has not been found to describe this condition as the name implies a defect. We consider that such small changes in the enamel surface, changes which may occur also from some other cause, and are detectable only by a trained observer, cannot be considered a disadvantage even aesthetically."

"In Marshall, Texas, the water is fluoridated to a level of 1 p.p.m. Marshall is in the southernmost State, and has a much higher average day temperature and a greater degree of humidity than have any of the other study areas. It was anticipated that water consumption would be greater than in the temperate areas so that the intake of fluoride would be considerably more. This may be so, but the effect on the teeth did not appear to be different from that noted in the other study areas."

"There is no essential difference between fluoride which occurs naturally in water and that which is added to water in the process of fluoridation and the action on teeth is therefore similar. This is borne out by the fact that the data already available shows complete parallelism in the dental condition of 6-year-old children living in natural fluoride areas and in those who live in fluoridated areas, where the fluoride levels are similar."

"Other studies in this country by Forrest, Parfitt and Bransby (1951) and in America by Deatherage (1943) and Russell and Elvove (1951) have shown that the beneficial effect is carried into adult life, at least up to age 45, but further investigations in the higher age groups are needed."

"A comparison of the English and American findings suggest that for the best dental results, especially among adults, a combination of fluoridation and a high standard of conservative dentistry is needed."

"Addition of fluoride to milk, as has been suggested, would be impossible to control in the actual addition or in the amounts consumed by the child. Similar arguments apply to the addition of fluoride to table salt, or other commodity. The wastage of fluoride added to water supplies is not serious and is insignificant in view of the benefits to be expected."

Summary and Conclusions

"Epidemiological studies in America have demonstrated beyond doubt that among children and adults who have been born and brought up in areas where the drinking water contains fluoride at a level of 1 p.p.m. or more, there is much less dental caries than in areas where the water is free from fluoride. Compared with areas where the drinking water contains little or no fluoride, there is about 60 per cent. less dental caries among children aged 12 to 14 years and about six times as many children have permanent teeth which are free from caries (18 to 29 per cent. compared to about 4 per cent.) A few studies among adults, both in England and in the United States show that the effect of fluorides persists at least up to about 40 years of age.

"In recent years many North American communities whose water supplies contain little or no fluoride had added fluorine compounds to their water. In certain of these communities the dental effects of 'fluoridation' have been studied carefully.

"In our opinion the evidence is conclusive that among children in fluoridation areas there is a reduction in the incidence of dental caries to a level comparable with that experienced where fluoride occurs naturally in the water. To date, a reduction of this extent has been demonstrated only among children up to 6 years of age, because no fluoridation scheme has been in progress for more than seven years. Data relating to older age groups are as yet insufficient to

"warrant firm conclusions.

"There is nothing to suggest that a water containing fluoride, naturally derived, has properties different from those of a water to which fluoride has been added. At the concentration of fluoride used, about 1.0 p.p.m. it is the fluoride ion that is operative and the nature of the salt used is of secondary importance.

"We consider that an artificially fluoridated water is similar in its action to one containing naturally derived fluoride. There is therefore sufficient evidence to indicate that the benefits derived by young children will accompany them into adult life. It is realised that time alone can demonstrate the truth of this contention.

"Doubt has been expressed about the risk of mottled enamel. It has been stated that 10 per cent. of the children drinking fluoridated water may develop very mild mottling of the teeth. This in our opinion is not a hazard. We observed that when mottling occurs it amounts only to an occasional white fleck in the enamel and is so slight that it cannot be recognised without expert examination. The appearance of the teeth is excellent.

"We have found no scientific evidence that there is any danger to health from the continued consumption of water containing fluoride in low concentration. In the areas where naturally occurring fluorides are present at a level of 1.0 p.p.m. mortality statistics do not indicate any hazard due to fluorides and medical experience in such areas has not produced any evidence of increased morbidity. Many suggestions have been made that certain ill-effects may nevertheless occur. We can only comment that the proving of a negative is extremely difficult. Meanwhile, we are impressed by the fact that millions of people are living in ordinary good health on waters containing fluorides at levels of 1 p.p.m. or more.

"We could not find any evidence that fluoridated water had an adverse effect on industrial processes.

"The mechanical addition of fluoride to a water supply at any desired level presents few difficulties. With a correctly designed plant and proper controls there is no danger of adding a toxic overdose of fluoride.

"Methods of administering fluorides in which the individual can exercise a choice are at present few and positive control can be exercised only in the case of topical application of a solution of sodium fluoride. This method

"has not given the same degree of protection against dental caries as the fluoridation of water, nor has the effect been as lasting. Another method whereby tablets of sodium fluoride are dissolved in the drinking water for an individual or family may have some use in a region lacking a piped supply but its careless use may be ineffectual and even risky. In our opinion fluoridation of water supplies is preferable to all other methods."

C. Present Extent of Fluoridation in North America - June 1954.

1. U.S.A.

No. communities adding fluoride to water supply -	981
No. people served	- - 17,601,658
No. States involved	- - 43
(also the Panama Canal Zone and Puerto Rico.)	

2. Canadian communities fluoridating water supply:

Brantford, Ont.
 Assiniboia, Sask.
 Deep River, Ont.
 Fort Erie, Ont.
 Moose Jaw, Sask.
 Oshawa, Ont.
 Pointe Claire, Que.
 Sudbury, Ont.
 Thorold, Ont.

3. Places of over 100,000 population having fluoridation in use:

<u>Place</u>	<u>Population served</u>
Akron, Ohio	285,000
Baltimore, Md.	1,180,000
Canton, Ohio	117,000
Charlotte, N. C.	136,000
Chattanooga, Tenn.	162,000
De Kalb County, Ga.	135,000
Fort Wayne, Ind.	134,000
Greenville, S. C.	150,000
Grand Rapids, Mich.	176,000
Corpus Christi, Tex.	108,000
Indianapolis, Ind.	460,000
Little Rock, Ark.	146,000
Louisville, Ky.	408,000
Madison, Wis.	102,000
Miami, Fla.	354,000
Monmouth County, N. J.	223,000
Nashville, Tenn.	173,000
New Rochelle, N. Y.	100,000
Norfolk, Va.	300,000
Pittsburg, Penn.	770,000

<u>Place</u>	<u>Population served</u>
Puerto Rico	400,000
Providence, R. I.	373,000
Richmond, Va.	242,000
Rochester, N. Y.	333,000
San Fransico, Cal.	775,000
St. Paul, Minn.	318,000
Washington, D. C.	1,000,000
Washington Suburban Area	300,000
Youngstown, Ohio	168,000
Williamsburg, Penn.	200,000
Tulsa, Okla.	183,000
Milwaukee, Wis.	637,000
Philadelphia, Pa.	2,057,210 (22 Sept. 54)

